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NRDC Comments on Amendments to Computers Standards

Additional submitted attachment is included below.



NATURAL RESOURCES DEFENSE COUNCIL

NRDC Comments on CEC Proposed Amendments to Computers Regulations

**2016 Appliance Efficiency Rulemaking
Docket Number 17-AAER-15**

November 6, 2017

Submitted by:

Pierre Delforge, Natural Resources Defense Council

On behalf of the Natural Resources Defense Council and our more than 380,000 members and online activists in California, we respectfully submit these comments on the California Energy Commission's (CEC) proposal to amend the appliance efficiency regulations on Computers adopted in December 2016.

In December 2016, CEC adopted energy efficiency standards for computers that are due to go into effect on January 1, 2018 for workstations, high expandability computers and small-scale servers, on January 1, 2019 and July 1, 2021 for the "tier 1" and "tier 2" levels respectively for mainstream desktop computers and notebooks. These groundbreaking, first-in-the-nation standards, were projected to save Californians \$370 million in annual electricity bills after stock turnover.

CEC is now proposing to create a new allowance for discrete graphical processing units (GPUs) packaged on the same substrate (or chip) as the central processing unit (CPU), to expand the definition of discrete GPU, thereby also broadening the definitions for mobile gaming systems, mobile workstations, and alternative sleep mode that use the discrete GPU definition, and to adjust the mobile workstation definition to reduce the requirements that advanced graphics or memory be installed in the computer.

These changes have the potential to erode savings from the standards. While NRDC understands and supports the fact that standards may need adjusting when they might prevent the deployment of new technology or functionality, we believe this isn't the case in this situation.

Packaging a discrete GPU on the same chip as the CPU (which we'll refer hereafter as a "packaged discrete GPU") presents energy saving opportunities that are not readily available with conventional discrete GPUs packaged on a separate card: with packaged discrete GPUs, the display is plugged into the same port as the integrated GPU, instead of having to choose between separate ports on either the graphics card or the motherboard, and the integration of the discrete GPU enables switching between integrated and discrete GPU with no perceptible latency, and to only refresh the display when it

changes. These two energy saving techniques are already widely implemented in notebooks and all-in-one computers and known as “graphics switching”, “hybrid graphics”, and “panel-self-refresh”.

When these power management best practices are implemented, packaged discrete GPUs don’t need any extra allowance. Conversely, unwarranted allowances provide manufacturers opportunities to opt out of implementing energy efficiency best practices, thereby reducing savings from the standards.

As packaged GPUs are not yet commercially available, we cannot predict how aggressively manufacturers will push this technology and how quickly the market will adopt it. A slow adoption would have a limited impact on savings, but a rapid adoption would significantly reduce energy savings from these computer standards.

NRDC appreciates that manufacturers need a long lead time to make the necessary engineering changes to implement energy efficiency best practices in their products, and that the two years between standards adoption in December 2016 and effective date in January 2019 may not be sufficient to scale these practices across their entire product lines. We are therefore open to some reasonable allowance, as proposed by CEC, for tier 1 levels. However, the tier 2 effective date of July 2021 leaves manufacturers 4.5 years from adoption, which is more than sufficient to expand the use of technologies that are already used in some products today to their entire product portfolio.

Keeping strong standard levels over the long-term (such as the tier 2 timeframe of July 2021) is particularly important because it sends manufacturers a clear signal to invest in the engineering necessary to achieve these long-term levels. These long-term investments drive most of the savings from the standards.

NRDC therefore urges CEC to provide an allowance for packaged discrete GPUs only for tier 1, and to keep tier 2 levels as adopted in 2016. Should CEC proceed with its proposed weakening of tier 2 levels, it will be critical to closely monitor the market to ensure that this allowance does not become a major loophole in the standards.

However, market monitoring only allows to react to the market, not to shape it. And when reacting to loopholes, there are limited options available to regulators because it takes industry several years to update its technology and engineering roadmaps and scale the use of energy efficiency best practices across its entire product portfolio. Therefore sending a clear and strong long-term policy signal is so much more effective, from both an energy and a cost perspective, than setting short-term, reactive standards.

NRDC also urges CEC to consider the unintended consequences of expanding the definition of discrete GPU, as this definition is used in other definitions and requirements such as workstations, mobile workstation, mobile gaming systems, and alternative sleep mode. Broadening the definition of discrete graphics also broadens these categories, allowing more products to comply under these more generous requirements, and reducing overall savings.

Lastly, monitoring market adoption of the new packaged discrete graphics technology, requires changes to data submittal requirements in Table X. We support the changes proposed by the California investor-owned utilities (IOUs).

We appreciate the opportunity to provide this input to the CEC, and thank CEC for its careful consideration of our comments.

Respectfully submitted,

A handwritten signature in blue ink, appearing to read 'Delforge'.

Pierre Delforge
Director, High Tech Sector Energy Efficiency
Natural Resources Defense Council
111 Sutter St, 21st Floor
San Francisco, CA 94104
(415) 875-6100
pdelforge@nrdc.org